

AMENDMENTS TO THE CLAIMS

By this paper, claims 1-5 and 7-42 remain pending (claim 6 is cancelled, claims 2-5, 9, 10, 12-16 and 18-20 were previously amended, claim 42 has been added, and claims 1, 7, 8 and 31 are currently amended), as reflected below.

1. (Currently Amended) An optical device for focusing light emitted from a light-generating source of a dental instrument, the optical device comprising:

a lens having a first end that is substantially flat and a second end that is curved, wherein the substantially flat first end is configured for receiving light from the light-generating source, and wherein the curved second end is configured for focusing the light received by the first end; and

means for holding the first end of the lens adjacent to the light-generating source; and

means for protecting the lens from contact,

wherein the means for holding and the means for protecting comprise a transparent shield that is removably attachable to the dental instrument and which frictionally engages the lens.

2. (Previously Amended) An optical device as defined in claim 1, wherein the lens comprises at least one of glass, aluminum dioxide, sapphire, quartz, acrylic, polyacrylic, polypropylene, and silicone.

3. (Previously Amended) An optical device as defined in claim 1, wherein at least a portion of the second end of the lens has an aspheric curvature.

4. (Previously Amended) An optical device as defined in claim 3, wherein the aspheric curvature comprises at least one of a hyperbolic curvature, an elliptical curvature, and a parabolic curvature.

5. (Previously Amended) An optical device as defined in claim 1, wherein at least a portion of the second end has a hemispherical curvature.

6. (Cancelled)

7. (Currently Amended) An optical device as defined in claim 6 1, wherein the transparent shield protects the aspheric lens from making contact with the light-curable compounds while allowing light from the light-generating source to pass through the shield.

C 8. (Currently Amended) An optical device as defined in claim 6 1, wherein the transparent shield protects the lens from making contact with light-curable compounds while allowing light from the light-generating source to pass through the shield.

9. (Previously Amended) An optical device as defined in claim 8, wherein the transparent shield comprises a conical portion having an apex.

10. (Previously Amended) An optical device as defined in claim 9, wherein the second end of the lens focuses light from the light-generating source into a column of light having a diameter of about 8 mm at a distance of about 3 mm to about 5 mm from the apex of the transparent shield.

11. (Original) An optical device as defined in claim 1, wherein the light-generating source comprises an LED.

12. (Previously Amended) An optical device for focusing light emitted from a light-generating source of a dental curing instrument, the optical device comprising:

a lens having a first end that is substantially flat and a second end that is curved, wherein the first end is configured so as to receive light emitted from the light-generating source, and wherein the second end is configured for focusing the light received by the first end; and

a transparent shield configured so as to hold the first end of the lens adjacent to the light-generating source, the transparent shield protecting the lens from contact while enabling light from the light-generating source to pass through the transparent shield.

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13. (Previously Amended) An optical device as defined in claim 12, wherein the lens and the transparent shield each comprise at least one of glass, aluminum dioxide, sapphire, quartz, acrylic, polyacrylic, polypropylene, and silicone.

14. (Previously Amended) An optical device as defined in claim 13, wherein the second end of the lens is at least one of hyperbolic, ellipsoidal, and parabolic.

15. (Previously Amended) An optical device as defined in claim 14, wherein the lens focuses the light entering the first end of the lens into a column of light having a diameter of about 8 mm at a distance of about 3 mm to about 10 mm away from the second end of the lens.

16. (Previously Amended) An optical device as defined in claim 15, wherein the dental instrument includes an extension arm and an LED attached to an end of the extension arm.

17. (Original) An optical device as defined in claim 16, wherein the transparent shield is removably attachable to the end of the extension arm.

18. (Previously Amended) A light-generating and focusing assembly comprising:
a light-emitting diode; (12)
a lens having a first end and a second end, wherein the first end is positioned so as to receive light from the light-emitting diode, and wherein the second end is configured so as to focus light received by the first end in a desired manner; and
a transparent shield configured so as to protect the lens from physical contact during use and so as to allow light to pass through the transparent shield.
19. (Previously Amended) A light-generating and focusing assembly as defined in claim 18, wherein the lens and the transparent shield comprise at least one of glass, aluminum dioxide, sapphire, quartz, acrylic, polyacrylic, polypropylene, and silicone.
20. (Previously Amended) A light-generating and focusing assembly as defined in claim 18, wherein at least a portion of the second end of the lens is aspheric and is at least one of hyperbolic, ellipsoidal, and parabolic.
21. (Previously Added) A light-generating and focusing assembly as defined in claim 18, wherein at least a portion of the second end of the lens is hemispherical.
22. (Previously Added) A light-generating and focusing assembly as defined in claim 18, wherein the first end of the lens is positioned adjacent to the light-emitting diode.
23. (Previously Added) A light-generating and focusing assembly as defined in claim 22, further including a gap between the lens and light-emitting diode such that they are not in abutting contact.
24. (Previously Added) A light-generating and focusing assembly as defined in claim 18, wherein the assembly is attached to an extension arm of a dental light curing apparatus.
25. (Previously Added) A light-generating and focusing assembly as defined in claim 24, wherein the lens is removably attached to the extension arm.

26. (Previously Added) A light-generating and focusing assembly as defined in claim 24, wherein the transparent shield is removably attached to the extension arm. *col 16-1-6*

27. (Previously Added) A light-generating and focusing assembly as defined in claim 24, wherein the lens is attached to the extension arm by the transparent shield. *col 16-1-6*

28. (Previously Added) A light-generating and focusing assembly s defined in claim 24, wherein the lens is attached to the extension arm independently of the transparent shield. *06*

29. (Previously Added) An optical device as defined in claim 1, wherein the means for holding maintains a gap between the lens and the light-generating source such that they are not in abutting contact. *(10)*

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30. (Previously Added) An optical device as defined in claim 12, wherein the transparent shield holds the lens in a manner so as to maintain a gap between the lens and the light-generating source such that they are not in abutting contact. *ok*

31. (Currently Amended) A dental curing light comprising:

a main body portion;

an extension arm attached to the main body portion, the extension arm having an end distal to the main body portion that is suitable for placement into a mouth of a patient;

a light generating source disposed at the end of the extension arm distal to the main body portion; and

a lens removably attached to the end of the extension arm distal to the main body portion and positioned relative to the light generating source, and without an intervening fiber optic wand positioned between the lens and the light generating source, so as to focus light emitted by the light generating source.

32. (Previously Added) A dental curing light as defined in claim 31, wherein the main body portion supplies power to the light generating source.

33. (Previously Added) A dental curing light as defined in claim 31, wherein the light generating source comprises a light emitting diode.

34. (Previously Added) A dental curing light as defined in claim 31, wherein the lens comprises a first side that is substantially flat and an opposite side that is substantially curved.

35. (Previously Added) A dental curing light as defined in claim 34, wherein the substantially flat side of the lens is oriented toward the light generating source.

36. (Previously Added) A dental curing light as defined in claim 31, wherein the lens is removably attached to the extension arm by means of a transparent shield.

C1 37. (Previously Added) A dental curing light as defined in claim 36, wherein the transparent shield holds the lens adjacent to the light generating source.

38. (Previously Added) A dental curing light as defined in claim 36, wherein the lens and transparent shield comprise a plastic material.

39. (Previously Added) A dental curing light as defined in claim 36, wherein the transparent shield is threadably attached to the extension arm.

40. (Previously Added) A dental curing light as defined in claim 36, wherein the transparent shield comprises a conical portion having an apex.

41. (Previously Added) A dental curing light as defined in claim 36, wherein the light emitting source and lens are configured so as to be suitable for use in curing Class II restorations.

C2 42. (New) A light-generating and focusing assembly as defined in claim 18, wherein the lens is affixed to the transparent shield.